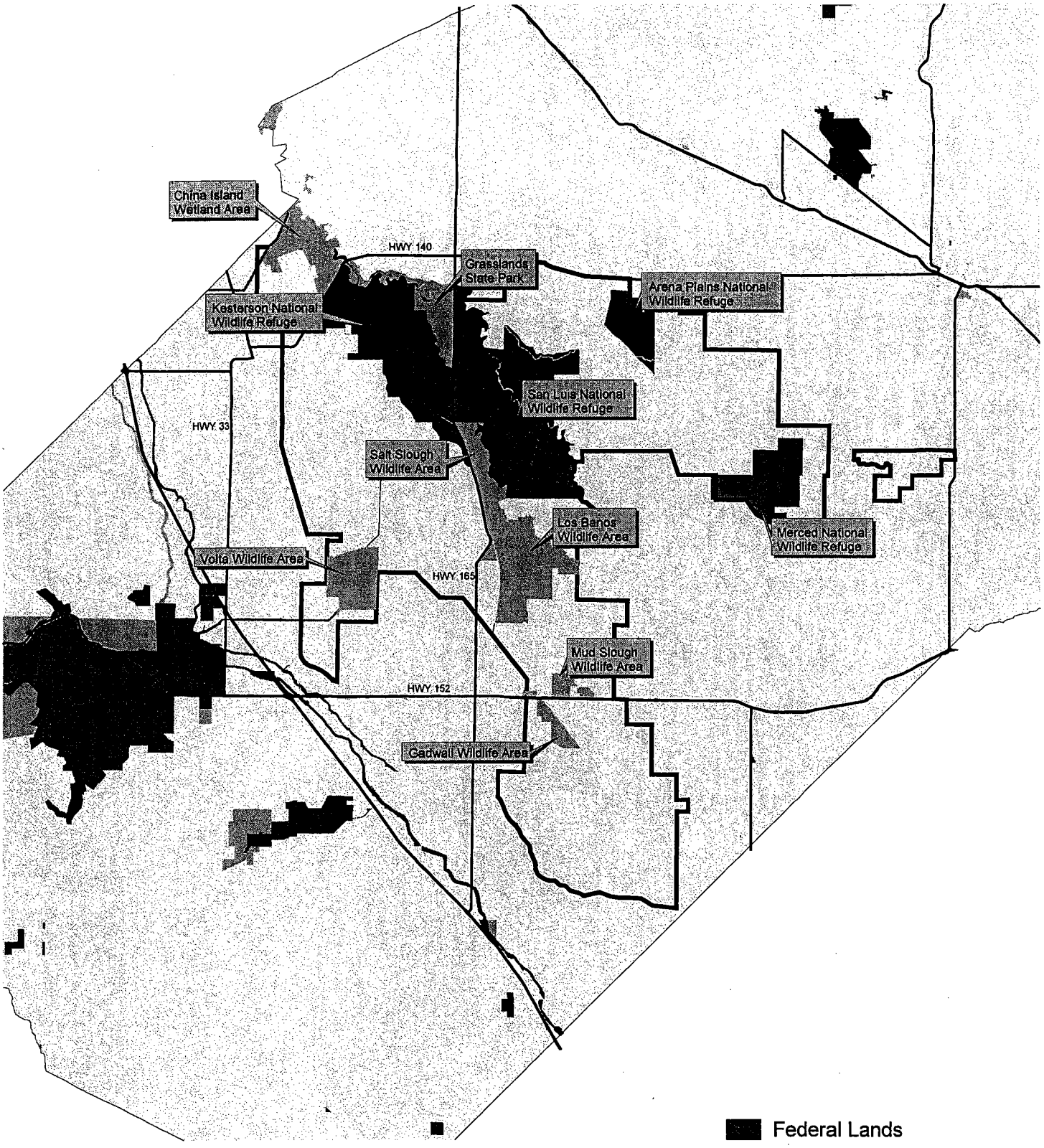
APPENDIX 1

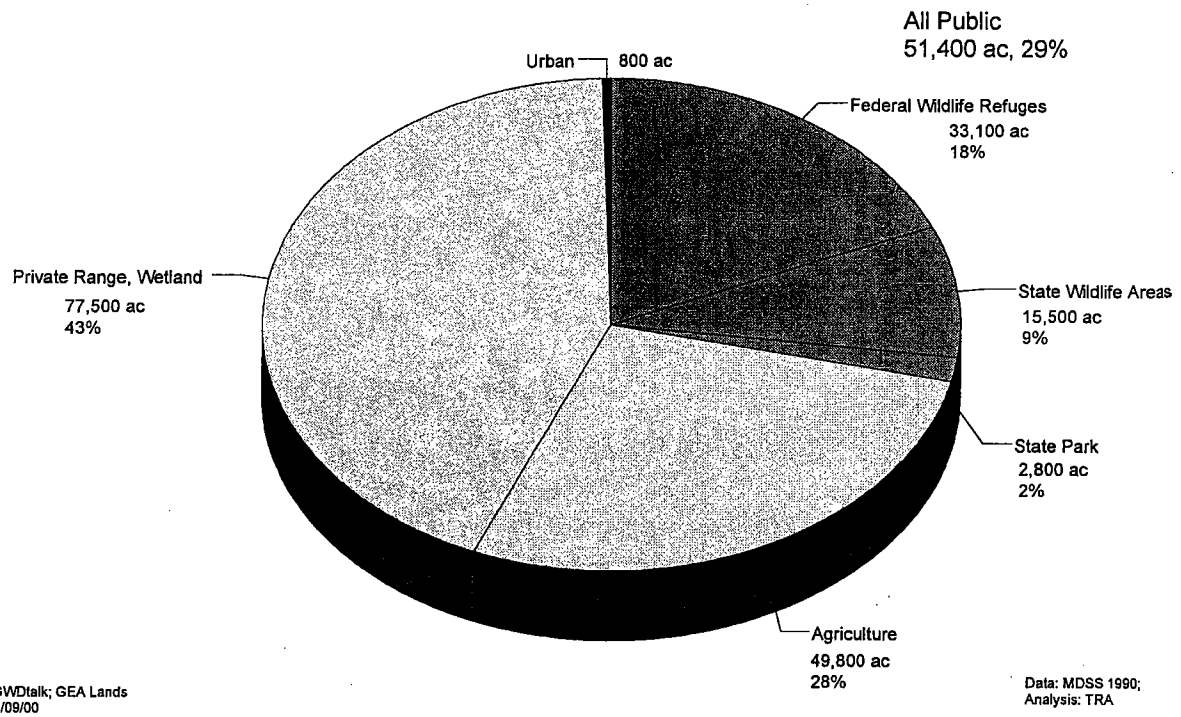
MAIN TEXT FIGURES

Figure 2
Grassland Ecological Area and Public Lands



Source: MDSS
Map: Thomas Reid Associates, 6/20/01

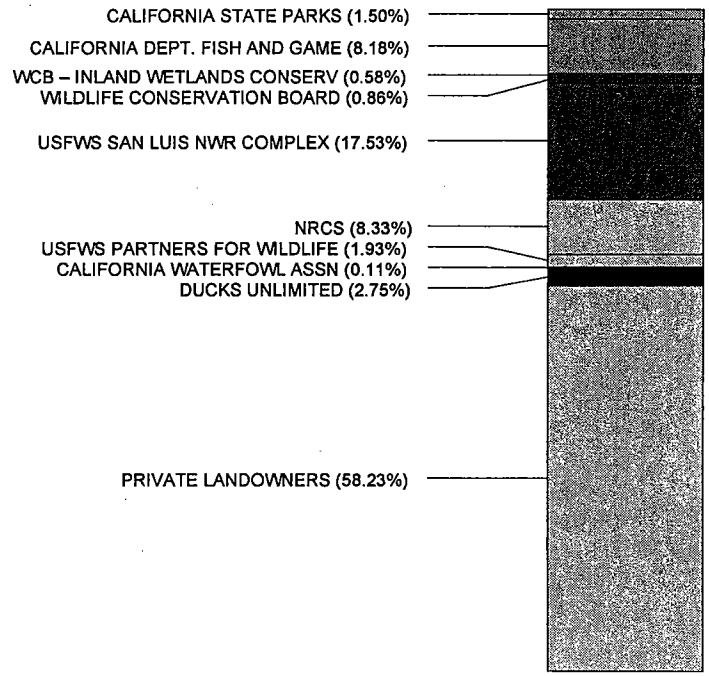
Figure 4 - Land Status in Grassland Ecological Area



CGWDtalk; GEA Lands
05/09/00

Data: MDSS 1990;
Analysis: TRA

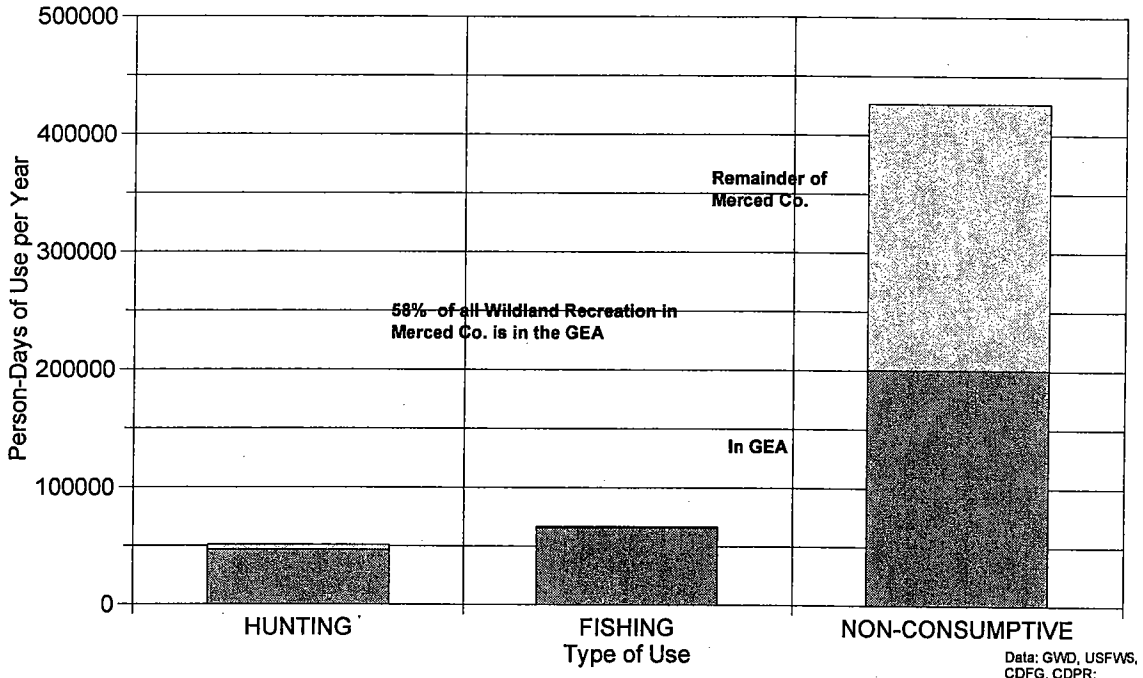
Figure 5 Participation in Land Management in Grassland Ecological Area



CGWDtalk; Mgmt Lands
05/09/00

Data: GWD, USFWS,
CDFG, others;
Analysis: TRA

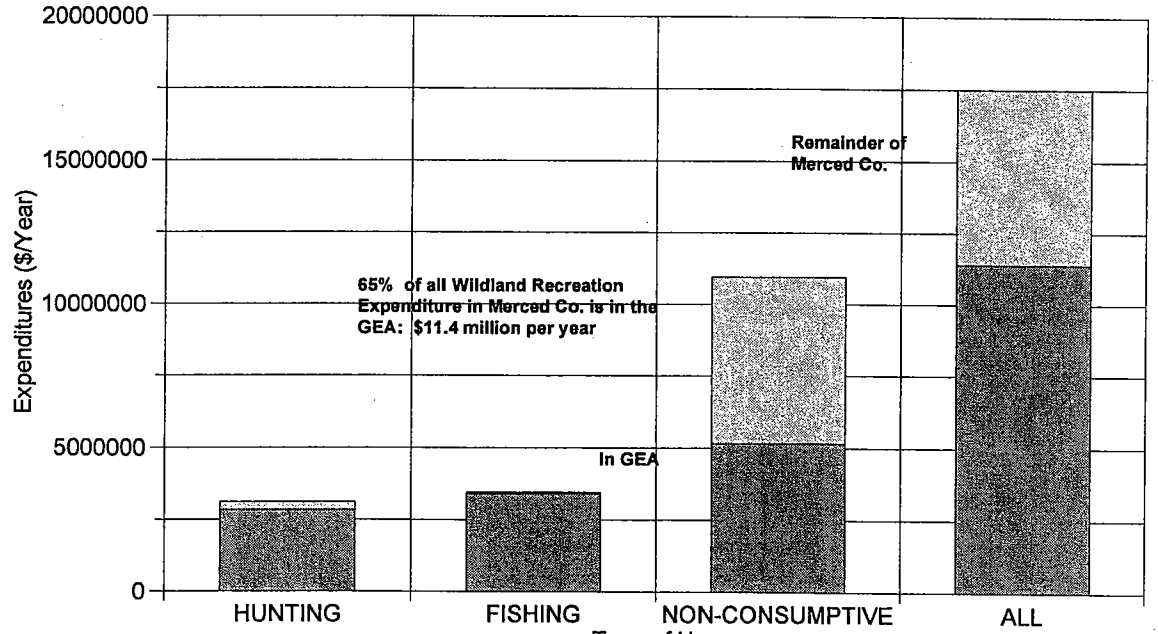
Figure 6
Recreation Use in GEA and Merced Co.



CGWDtalk; Rec Use
05/09/00

Data: GWD, USFWS, CDFG, CDPR;
Analysis: TRA

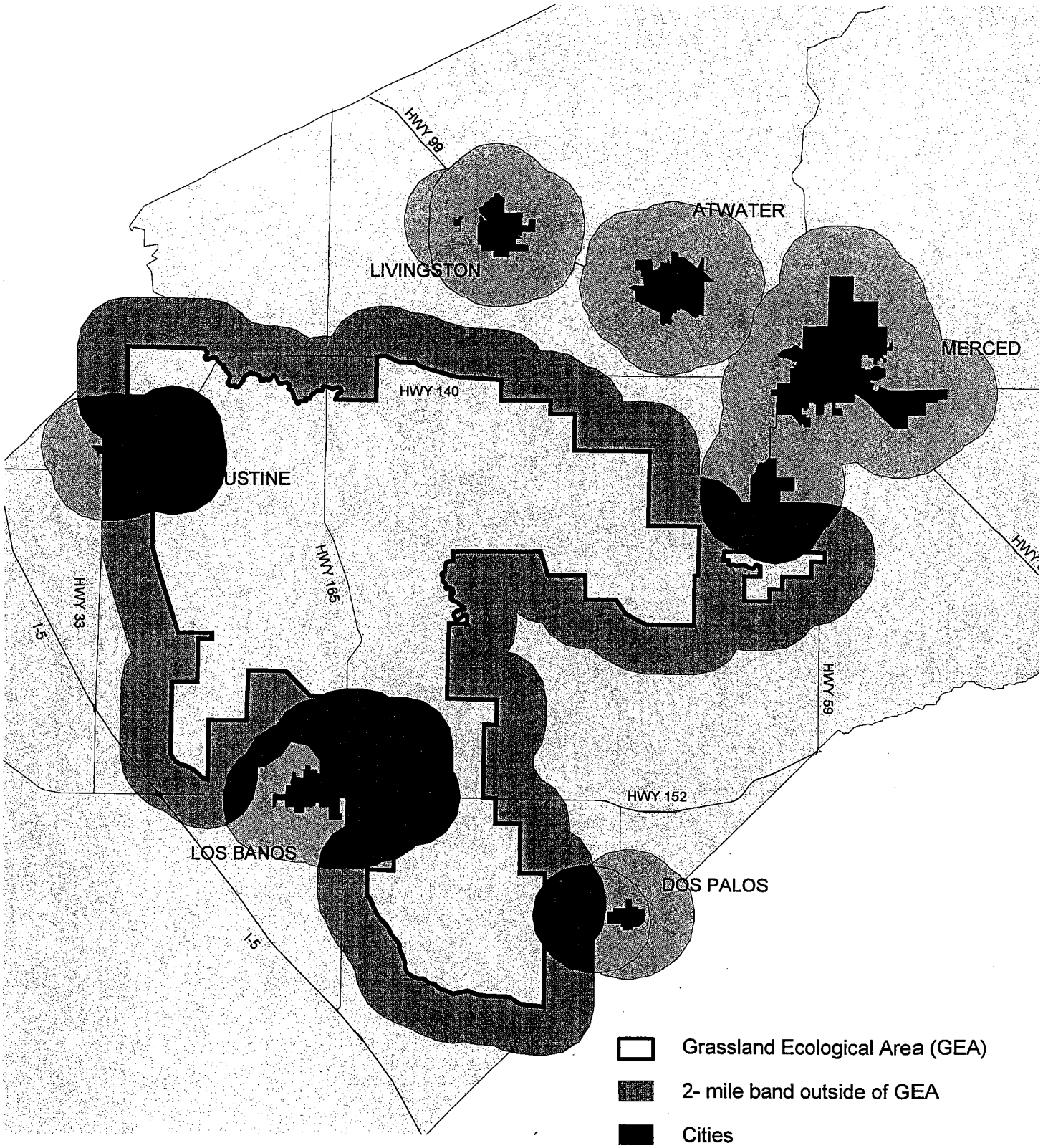
Figure 7
Recreation Value in GEA and Merced Co.



CGWDtalk; Rec Val
05/09/00

Data: GWD, USFWS, CDFG, CDPR;
Analysis: TRA

Figure 8
Cities and the Grassland Ecological Area
Zones of Conflict 2040



Source: Toby Goldman
Map: Thomas Reid Associates, 6/20/01

APPENDIX 1

TABLES

IMMA BLE ALL E DITUR OR HA MAN IENT GEA MERC OUNT 90-99

ALL EXPENDITURES FOR HABITAT MANAGEMENT – 1990 - 1999
ALL AGENCIES AND SPONSORS

ACRES												ALL MERCED	GEA
PROGRAM SPONSOR	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**TOTAL ACRES**	**AVG/YR**	**ONLY**
Private Landowners	110000	110000	110000	110000	110000	110000	110000	110000	110000	110000	1100000	110000	110000
NRCS					20372	19913	14174	8492	15771		78722	15744	15744
WILDLIFE CONSERVATION BOARD	5595		1198	340	697	483	2213	280	2160		12966	1621	1621
WCB – INLAND WETLANDS CONSERV	1101	1101	1101	1101	1101	1101	1101	1101	1101		9909	1101	1101
CAL FISH AND GAME	23065	23065	23065	23065	23065	23065	23065	23065	23065	23065	230650	23065	15454
CALIFORNIA STATE PARKS	33378	33378	33378	33378	33378	33378	33378	33378	33378	33378	333780	33378	2837
DUCKS UNLIMITED					2235	6786	20997	10200	6540		46758	5195	5195
USFWS PARTNERS FOR WILDLIFE	1294	4303	1749	276	10089	7149	2499	3496	1992		32847	3650	3650
USFWS SAN LUIS NWR COMPLEX	33108	33108	33108	33108	33108	33108	33108	33108	33108	33108	331080	33108	33108
CALIFORNIA WATERFOWL ASSN				203	203	203	203	203	203		1218	203	203
TOTAL ACRES	207541	204955	203599	201471	234248	235186	240738	223323	227318	199551	2177930	227065	188913

EXPENDITURES											ALL COUNTY	GEA ONLY
PROGRAM SPONSOR	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**TOTALS**	**AVG/YR**
Private Landowners	$4,325,200	$4,325,200	$4,325,200	$4,325,200	$4,325,200	$4,325,200	$4,325,200	$4,325,200	$4,325,200	$4,325,200	$43,252,000	$4,325,200	$4,325,200
GWD	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,434,353	$1,537,605	$14,971,958	$1,497,196	$1,497,196
NRCS					$240,562	$218,277	$166,278	$416,847	$78,232		$1,120,196	$140,025	$140,025
WILDLIFE CONSERVATION BOARD	$6,275,000		$1,220,000	$776,845	$1,550,000	$1,033,000	$119,668	$40,386	$429,020		$11,443,919	$1,271,547	$1,271,547
WCB – INLAND WETLANDS CONSERV	$94,222	$94,222	$94,222	$94,222	$94,222	$94,222	$94,222	$94,222	$94,222		$847,998	$84,800	$84,800
CAL FISH AND GAME	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$30,000,000	$3,000,000	$2,010,000
CALIFORNIA STATE PARKS	$1,818,626	$1,561,666	$1,791,779	$1,736,411	$1,948,999	$1,803,604	$1,782,720	$1,725,242	$1,969,156	$1,570,645	$17,708,848	$1,770,885	$150,525
DUCKS UNLIMITED					$461,835	$2,373,770	$1,883,355	$258,661	$5,389,612		$10,367,233	$1,151,915	$1,151,915
USFWS PARTNERS FOR WILDLIFE	$157,535	$222,681	$160,315	$88,245	$253,199	$192,250	$135,351	$1,097,163	$205,545		$2,512,284	$279,143	$279,143
USFWS SAN LUIS NWR COMPLEX	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$3,000,000	$2,403,281	$2,691,569	$2,822,974	$3,327,770	$5,530,023	$31,775,617	$3,177,562	$3,177,562
CALIFORNIA WATERFOWL ASSN				$31,866	$31,866	$31,866	$31,866	$31,866	$31,866		$191,196	$31,866	$31,866
TOTAL EXPENDITURES	$20,170,583	$13,703,769	$15,091,516	$14,552,789	$16,405,883	$16,975,470	$15,730,229	$15,312,561	$20,284,976	$15,963,473	$164,191,249	$16,730,139	$14,119,779
EXPENDITURE PER ACRE PER YEAR	$97	$67	$74	$72	$70	$72	$65	$69	$89	$80		$74	$75
PUBLIC EXPENDITURE PER ACRE PER YE	$162	$99	$115	$112	$97	$101	$87	$97	$136	$130		$106	$124

DRAFT 5/08/00

UPPORTING TABLE S1
JSFWS EXPENDITURES FOR WETLAND ENHANCEMENT AND RESTORATION 1996-98
US FISH AND WILDLIFE SERVICE COST SHARE

NAME	WETLAND ACRES RESTORED	WETLAND ACRES ENHANCED	TOTAL ACRES	RIPARIAN MILES RESTORED	TOTAL COST	FWS COST	COOPERATORS
Bee Ess Land and Cattle	0	700	700	0	$31,651	$5,000	WCB
ighty Gun Club	0	80	80	0	$4,000	$2,000	
ewitson Ranch	285	0	285	0	$25,800	$12,000	DU,NRCS
Modesto Properties	0	600	600		$37,000	$12,000	DU?
h So Hi	0	118	118		$3,500	$1,750	
alinas Land and Cattle	0	200	200		$15,000	$7,500	
Stevens Creek Quarry	84	0	84		$2,400	$1,200	
Underwood	0	152	152		$6,000	$3,000	DU
/ebfoot	0	280	280		$10,000	$5,000	
996 TOTAL	369	2130	2499	0	$135,351	$49,450	
ustine Land and Cattle	0	2211	2211		$12,012	$6,000	
a Canada	0	127	127		$11,620	$5,000	
Modesto Properties	47	500	547		$25,775	$10,000	DU,NRCS
New McNamara	0	173	173		$38,978	$0	DU
amacclotti-Wooten	0	138	138		$60,898	$10,000	DU,NRCS
an Felipe Ranch	0	0	0	5	$902,880	$25,000	DU,NRCS,WCB
Vogt, Chet	0	300	300		$45,000	$5,000	
997 TOTAL	47	3449	3496		$1,097,163	$61,000	
240 Gun Club	0	240	240		$14,200	$7,100	DU
astle Duck Club	0	712	712		$116,545	$10,000	WCB, NRCS
ables Land and Cattle	0	197	197		$12,525	$4,700	NRCS
allo, Michael	75	0	75		$19,150	$4,800	NRCS
Giovanotto Duck Club	0	47	47		$20,000	$7,500	NRCS
alinas Land and Cattle	0	675	675		$20,500	$10,250	
/ooten Gun Club	0	46	46		$2,625	$1,100	NRCS
1998 TOTAL	75	1917	1992		$205,545	$45,450	

SUPPORTING TABLE S2
NRCS EXPEIDITURES FOR HABITAT RESTORATION AND EASEMENT ACQUISITIONS 1994 - 98

YEAR	PARTICIPANTS	ACRES	RESTOR	ACQUIS	PAYMENTS
1994					
AG CONSERVATION PROGRAM	9	459	$22,285		$22,285
WATERBANK PROGRAM	43	19913	$218,277		$218,277
1994 TOTALS	52	20372	$240,562		$240,562
1995					
AG CONSERVATION PROGRAM	0	0	$0		$0
WATERBANK PROGRAM	43	19913	$218,277		$218,277
1995 TOTALS	43	19913	$218,277		$218,277
1996					
AG CONSERVATION PROGRAM	8	734	$22,967		$22,967
WATERBANK PROGRAM	33	13440	$143,311		$143,311
HABITAT SUBTOTAL	41	14174	$166,278	$0	$166,278
WETLAND RESERVE PROGRAM					
Permanent Easements	1	149	$51,304	$298,160	$349,464
30-Year Easements	0	0			$0
EASEMENT SUBTOTAL	1	149	$51,304	$298,160	$349,464
1997					
AG CONSERVATION PROGRAM					
WATERBANK PROGRAM	26	7922			$92,600
Restoration Agreements	3	570	$416,847		$416,847
HABITAT SUBTOTAL	29	8492	$416,847	$0	$509,447
WETLAND RESERVE PROGRAM					
Permanent Easements	0	0			$0
30-Year Easements	1	593	$85,000	$800,280	$885,280
1997 EASEMENT SUBTOTAL	1	593	85000	800280	885280
1998					
AG CONSERVATION PROGRAM					
WATERBANK PROGRAM	23	6576			$77,443
CONSERVATION RESERVE PROGRAM	7	5340	$78,232		$101,565
WILDLIFE HABITAT INCENTIVE PROGRAI	11	3855			$81,339
HABITAT SUBTOTAL	41	15771	$78,232	$0	$260,347
WETLAND RESERVE PROGRAM					
Permanent Easements	1	178	$75,000	$267,750	$101,565
30-Year Easements	0	0			$0
1998 TOTALS	1	178	$75,000	$267,750	$101,565

SUPPORTING TABLE S3
CWCB EXPENDITURES FOR WETLAND RESTORATION AND ACQUISITIONS 1990 - 1998
CALIFORNIA WILDLIFE CONSERVATION BOARD
INLAND WETLANDS CONSERVATION PROGRAM
1990 to 1998

PROJECT	ACRES	COST
Acquisitions		
Los Banos Wildlife (Reserve Gun Club)	171	$278,000
Mud Slough Wetlands (Hwy 152)	780	$570,000
Mud Slough Wildlife Area (Neves and Lo Bue)	258	$661,000
TOTAL ACQUISITIONS	1209	$1,509,000
Restoration Projects		
Mud Slough Wetland Restoration	780	$30,000
Los Banos Wildlife Area (Field 62)	302	$312,000
Stillbow Water Delivery System	2000	$8,000
N. Grassland Wildlife Area (China Island Unit)	535	$291,000
San Joaquin Valley Wetland Restoration	285	$47,000
Mud Slough North Drainage	2800	$34,000
Grassland Envir. Education Center	15	$27,000
Wetland Enhancement Bee Ess	700	$23,000
Wetland Enhancement (Modesto Properties)	1283	$76,000
TOTAL RESTORATION PROJECTS	8700	$848,000
GRAND TOTAL	9909	$2,357,000
PER YEAR AVERAGE	1101	$261,889

SUPPORTING TABLE S4
CDFG EXPENDITURES FOR ALL ACTIVITIES 1999-2000

Habitat Conservation and Planning	$160,000
Inland and Anadromous Fisheries Management	$600,000
Wildlife Management	$160,000
Wildlife Refuge Management	$1,120,000
Hatchery Programs	$240,000
Law Enforcement	$370,000
Administration	$350,000
Subtotal	$3,000,000

CALIFORNIA DEPARTMENT OF FISH AND GAME
CALIFORNIA WATERFOWL HABITAT PROGRAM (Presley Program)

	NO. PROPERTIES	ANN. AV.	ACRES	ANN. AV.
1993 through 1996	17	4.25	5619	1405
1997 through 1998	9	4.5	1828	914
TOTAL	26		7447	

YEAR	PAYMENT
1994	$112,380
1995	$112,380
1996	$112,380
1997	$107,844
1998	$148,940
TOTAL	$593,924

EASEMENT	Klamath	248	$372,000

SUPPORTING TABLE S5
DUCKS UNLIMITED EXPENDITURES FOR HABITAT ENHANCEMENT 1994-1999
DUCKS UNLIMITED

YEAR	PROJECT	ACRES	COST
1994	Underwood	1093	$10,500
	Salt Slough I	686	$246,560
	Salt Slough II	336	$149,775
	Salt Slough Pipeline I	120	$55,000
	1994 TOTALS	2235	$461,835
1995	Mud Slough	395	$1,450,100
	Greenhouse	3650	$57,500
	Greenhouse	1900	$15,135
	China Island I	636	$291,644
	Los Banos WA Road 62	205	$46,283
	1995 TOTALS	6786	$2,373,770
1996	Rooney Ranch	100	$8,500
	Modesto Property	500	$32,045
	Baron	600	$23,000
	Mesquite?	220	$4,000
	South City	179	$8,000
	Red Fern	100	$9,000
	Santa Fe L&C	106	$10,600
	Ramogni	216	$25,400
	Haywire	180	$13,000
	Triple D	90	$9,800
	Underwood	246	$10,000
	China Island III	250	$83,836
	Gadwall Unit	470	$95,264
	Boundary Drain	500	$142,305
	Salt Slough Pipeline II	175	$122,416
	San Luis NWR– Kesterson Unit	306	$224,174
	San Luis NWR– Nevada Unit	350	$20,000
	San Luis NWR– Sousa	256	$80,000
	San Luis NWR– Mariposa	400	$185,000
	San Luis NWR– East Kesterson	407	$187,000
	Gadwall Ditch Extension	1718	$163,190
	Los Banos Creek Rehabilitation	6267	$216,991
	Eagle Ditch Enhancement	3021	$72,360
	Big Water Delivery Ditch	306	$66,167
	Fremont Drain	1024	$3,478
	Big Water Drain	1658	$15,678
	Upper Gadwall	740	$12,256
	Brillo Ditch	612	$9,895
	Monitoring and Evaluation		$30,000
	1996 TOTALS	20997	$1,883,355

YEAR	PROJECT	ACRES	COST
1997	Monitoring and Evaluation		$30,000
	Underwood	3780	$10,000
	New Windmere?	640	$49,476
	San Joaquin Wedland Farms	246	$38,500
	Ramagiotti Wooden	620	$62,550
	Deer Park	230	$3,000
	Hollow Tree	457	$10,000
	Wheel Berry	72	$15,135
	Hollister	4000	$10,000
	Mendota	155	$30,000
	1997 TOTALS	10200	$258,661
1998	Monitoring and Evaluation		$30,000
	Hollister?	35	$7,000
	Fresher Farms?	150	$17,500
	Ducks Home	266	$10,000
	Modesto Properties	935	$46,242
	South City	179	$10,915
	240 Club	1600	$16,200
	Santa Cruz		
	Santa Fe Sierra	100	$7,345
	San Luis NWR – Flood Relief	1850	$2,765,000
	Merced NWR	1000	$1,500,000
	Los Banos WA Road 62		$151,770
	San Felipe Ranch	425	$827,640
	1998 TOTALS	6540	$5,389,612
1999	Rooney Ranch	100	$20,750
	Lower Borgess	40	$16,000
	Gallo	360	$56,500
	Pioneer	153	$3,700
	South City	75	$4,000
	Frasher Farms	150	$19,000
	Mar	220	$22,500
	Halfback	119	$15,000
	Riverfield	342	$8,250
	Redfern	192	$3,800
	The Duck Club	167	$3,750
	Oh So Hi	188	$5,000
	Six Spot	55	$4,500
	North Anchor Marsh	30	$7,000
	Mesquite	200	$4,000
	Fremont Pond	73	$25,500
	Castle Duck Club – Ph. 2		$36,884
	Exeter Land and Cattle Ph. 2		$5,875
	1999 TOTALS	2464	$262,009
	GRAND TOTAL	49222	$10,629,242

SUPPORTING TABLE S6
USFWS PARTNERS FOR WILDLIFE EXPENDITURES FOR HABITAT ENHANCEMENT 1990 - 98
USFWS PARTNERS FOR WILDLIFE PROGRAM

CLUB	ACRES	COST
B" AND "D" GUSTINE	198	$4,900
SIMPLE TEN CLUB	166	$5,915
EXETER DEVELOPMENT CLUB	0	$10,600
SAN JOAQUIN WETLAND FARMS	600	$33,100
FOUR "S" LAND AND CATTLE	150	$32,000
MESQUITE GUN CLUB	45	$7,000
GUSTINE LAND AND CATTLE	19	$14,500
COACHES GUN CLUB	43	$20,020
KLAMATH LAND AND CATTLE	73	$29,500
1990 TOTALS	1294	$157,535
GUSTINE GUN CLUB	500	$5,479
HOLLISTER LAND AND CATTLE	1000	$15,400
DEER PARK	24	$7,300
UNDERWOOD SOUTH	50	$8,000
ABINANTE CLUB	30	$15,000
SAN JOAQUIN WETLAND FARMS	12	$15,200
CLEAR LAKE LAND AND CATTLE	60	$12,000
DOUBLE "D" DUCK CLUB	56	$7,500
REEDLEY GUN CLUB	56	$7,500
SANTA FE SIERRA	75	$39,000
STILLBOW RANCH ET AL	2000	$20,000
SAND LAKE	51	$12,000
E.T.N. INC.	14	$11,502
KLAMATH LAND AND CATTLE	250	$4,800
FOUR "S" LAND AND CATTLE	125	$42,000
1991 TOTALS	4303	$222,681
GUSTINE LAND AND CATTLE	220	$3,588
HOLLISTER GUN CLUB	72	$9,600
BARBARA DUCK CLUB	70	$5,000
REEVES LAKE	13	$17,000
UNDERWOOD NORTH	20	$6,000
SIMPLE TEN CLUB	15	$5,000
EXETER	115	$10,000
RAMOGNI LAND COMPANY	42	$8,032
PIEDMONT	73	$5,500
FLYWAY CLUB	26	$17,800
SAND LAKE	30	$16,000
GABLES GUN CLUB	445	$7,000
COACHES GUN CLUB	43	$10,000
GATOS GUN CLUB	15	$6,000
$"D" AND "B"	60	$5,000
BARDIN RANCH	245	$12,710
SNOWBIRD RANCH	120	$12,000
FOUR "S" LAND AND CATTLE	125	$4,085
1992 TOTALS	1749	$160,315
MAR LAND AND CATTLE	0	$0
SUNSET	0	$6,522
FLYWAY RANCH	0	$8,250
SAND LAKE DEVELOPMENT	0	$9,945
FRASHER FARMS	0	$5,000
COACHES GUN CLUB	0	$10,261
ABC LAND AND CATTLE	30	$12,508
BARBARA DUCK CLUB	0	$13,761
ROBERT FLYNN	160	$12,319
WHEEL-BERRY	86	$9,679
1993 TOTALS	276	$88,245

CLUB	ACRES	COST
BRIDGEPORT RESERVOIR	0	$6,000
MAGNESON	0	$2,750
MESQUITE DRAIN	0	$14,124
BRITTO DRAIN	0	$5,835
SANTA FE LAND AND CATTLE	0	$3,937
TRANQUILITY GUN CLUB	160	$5,000
PIEDMONT LAND DEVELOPMENT	20	$2,100
SUNSET	30	$5,300
STILLBOW RANCH	588	$12,462
ROONEY RANCH (CLEAR LAKE)	55	$9,985
ALMADEN	228	$9,700
SOUTH SAN FRANCISCO	50	$6,700
COON DUCK CLUB	55	$6,843
GALLO (BEAR CREEK)	400	$8,000
MODESTO PROPERTIES	1900	$22,025
SAN FELIPE RANCH	400	$25,000
WHEEL-BERRY	30	$5,142
MUD SLOUGH DRAIN PROJECT	5633	$80,893
SAN JOAQUIN WETLAND FARMS	220	$9,403
WINGSETTER (SASO)	320	$12,000
1994 TOTALS	10089	$253,199
SOUTH SAN FRANCISCO	20	$5,000
BARDIN	600	$27,000
GREENHOUSE RANCH	650	$66,250
EXETER DEVELOPMENT	0	$12,000
HOLLOW TREE DRAIN	5839	$48,000
SAN JOAQUIN WETLAND FARMS	40	$34,000
1995 TOTALS	7149	$192,250
EIGHTY GUN CLUB	80	$4,000
UNDERWOOD	152	$6,000
OH SO HI	118	$3,500
WEBFOOT	280	$10,000
HEWITSON RANCH	285	$25,800
SALINAS LAND AND CATTLE	200	$15,000
MODESTO PROPERTIES	600	$37,000
STEVENS CREEK QUARRY	84	$2,400
BEE ESS LAND AND CATTLE	700	$31,651
1996 TOTALS	2499	$135,351
Gustine Land and Cattle	2211	$12,012
La Canada	127	$11,620
Modesto Properties	547	$25,775
New McNamara	173	$38,978
Ramacciotti-Wooten	138	$60,898
San Felipe Ranch	0	$902,880
Vogt, Chet	300	$45,000
1997 TOTAL	3496	$1,097,163
240 Gun Club	240	$14,200
Castle Duck Club	712	$116,545
Gables Land and Cattle	197	$12,525
Gallo, Michael	75	$19,150
Giovanotto Duck Club	47	$20,000
Salinas Land and Cattle	675	$20,500
Wooten Gun Club	46	$2,625
1998 TOTAL	1992	$205,545
GRAND TOTAL	32847	$2,512,284

SUPPORTING TABLE S7
CWA EXPENDITURES FOR HABITAT ENHANCEMENT 1993-98
CALIFORNIA WATERFOWL ASSOCIATION

1993 THROUGH 1998

PROJECT	ACRES	COST
BEE ESS LAND AND CATTLE	100	$26,500
ELLWORTHY BROTHERS	325	$16,198
CASTLE DUCK CLUB	720	$135,000
UNDERWOOD GUN CLUB	40	$9,000
EXETER LAND AND CATTLE	32	$4,500
TOTALS	1217	$191,198
PER YEAR AVERAGE	203	$31,866

SUPPORTING TABLE S8
CALIFORNIA WILDLIFE CONSERVATION BOARD MERCED COUNTY PROJECTS
CAPITAL PROJECTS (PUBLIC ACCESS AND CONVEYANCE) 1965-1999

YEAR/PROJECT	ALLOCATION	ACREAGE	PURPOSE
1965			
Los Banos WLA Expansion	$46,506	208	
1969			
Canyon Road	$12,400		public access
Cottonwood Road	$11,800		public access
Mervel Road	$10,800		public access
1978			
Cottonwood Creek WLA	$722,000	6136	
1980			
Cottonwood Creek WLA – Dev. Planning	$23,500		soil samples
Los Banos WLA Water System Improvement	$45,200		conveyance system
1981			
Los Banos WLA Water System Improvement	$33,075		
1982			
Los Banos WLA Water Supply Agreement	$200,000		water supply
1984			
Cottonwood Creek WLA -- Water Supply	$0		conveyance system
1985			
1986			
Grassland Water Facility Improvement Project	$450,000		conveyance system
1987			
Los Banos – Exp 1	$1,725,000	1329	
Los Banos - Exp 2	$1,465,000	929	
Los Banos - Exp 3	$210,000	120	
1990			
North Grassland WLA-- Salt Slough/China Islanc	$6,275,000	5595	
1992			
Los Banos - Exp 4	$278,000	171	
Mud Slough Wetlands	$570,000	779	
Wetland CEP-Klamath Land/Cattle	$372,000	248	
1992 TOTAL	$1,220,000	1198	
1993			
Mud Slough Wetlands Restoration	$30,000		conveyance system
Stillbow Water Delivery System	$8,000		conveyance system
West Hilmar WLA	$690,000	340	
Los Banos WLA PA (Parking Lot)	$48,845		public access
	$776,845	340	
PRE-1993 TOTAL ALL YEARS	$13,227,126	17053	
1994			
Mud Slough WLA	$1,200,000	395	
Los Banos WLA Wetland Restoration	$350,000	302	
1994 TOTAL	$1,550,000	697	
1995			
Mud Slough North Drainage Project	$34,000		conveyance system
Mud Slough Exp 1	$661,000	258	
North Grassland WLA – China Is. Unit	$291,000	225	
San Joaquin Valley Wetland Restoration	$47,000		
1995 TOTAL	$1,033,000	483	
1996			
Grassland Educational Center – WR	$27,000	230	
Wetland Enhancement – Bee Ess Property	$23,051	700	
Wetland Enhancement – Modesto Property	$69,617	1283	
1996 TOTAL	$119,668	2213	
1997			
Wetland Habitat Restoration (Elworthy)	$40,386	280	
1998			
Owens Creek Habitat Restoration	$150,000		
Wetland Habitat Restoration and Enhancement (Santa Cruz Land and Cattle)	$65,000	1440	
Enhancement/Restoration (Castle Land and Cattle)	$62,250	720	
Los Banos WLA PA	$151,770		
1998 TOTAL	$429,020	2160	
1999			
East Grasslands Wetlands	$15,000	41	
Mud Slough-- Exp 2	$1,300,000	724	
1999 TOTAL	$1,315,000	765	
GRAND TOTAL	$17,714,200	22453	

SUPPORTING TABLE S9
GWD BUDGETS FOR CAPITAL EXPENDITURES AND MAINTENANCE; WATER DELIVERY CHARGES BY AGENCY

1996

Capital Expenditures		
Structures		
Silt Removal/Channel Repair		
SUBTOTAL	$269,360	
Maintenance Cost		
Aquatic Weed Control	$13,000	
Levee Road Maintenance	$70,000	
Herbicide Application	$10,000	
SUBTOTAL	$93,000	
TOTAL ANNUAL CAPITAL EXPENDITURE	$362,360	For total GWD budget see O&M page
Water Delivery Charges		
CCID (163630 acf @ 5.67/acf)	$927,327	
GWD (35810 acf @ 13.75/acf)	$492,388	
SLCC for CVPIA water (14000 acf @14.09/acf)	$197,260	
SLCC (36,480 acf @ 13.02/acf)	$474,979	
	$2,091,954	

SUPPORTING TABLE S10
IN LIEU FEES PAID TO MERCED COUNTY BY STATE AND FEDERAL AGENCIES

STATE OF CALIFORNIA
CALIFORNIA DEPARTMENT OF FISH AND GAME

YEAR	IN LIEU FEE AMOUNT
94thru 95	$36,702
95 thru 96	$51,922
96 thru 97	$54,213
97 thru 98	$54,213
98 thru 99	$54,213

FEDERAL GOVERNMENT

US FISH AND WILDLIFE SERVICE	SAN LUIS NWR	MERCED NWR	
ACRES	26,074	7,034	
APPRAISED VALUE	$1,620,000	$365,000	$1,985,000
1998 TAXES PAID TO MERCED CO.	$75,641	$17,043	$92,684
IN LIEU FEES PER ACRE	$2.90	$2.42	

TOTAL (STATE PLUS FEDERAL) $146,897

SUPPORTING TABLE S11
STATE, FEDERAL AND GWD O&M BUDGETS

CAL STATE PARKS

	SALARIES AND BENEFITS	O&E PROJECTS	CONTRACTS AGREEMENTS	TOTAL
FY 99/00				$1,570,645
FY 98/99	$931,462	$1,037,964		$1,969,426
FY 97/98				$1,725,242
FY 96/97				$1,782,720
FY 95/96				$1,803,604
FY 94/95				$1,948,999
FY 93/94				$1,736,411
FY 92/93				$1,791,779
FY 91/92				$1,561,666
FY 90/91				$1,818,626
FEDERAL: SAN LUIS NWR COMPLEX				
FY 1999	$1,438,429	$1,773,404	$2,318,190	$5,530,023
GWD				
FY1998	$1,297,506	$240,099		$1,537,605
FY1999	$1,104,932	$329,421		$1,434,353

SUPPORTING TABLE S-12

TOTAL ACRES AND COSTS OF CONSERVATION EASEMENTS – ALL ENTITIES
CONSERVATION EASEMENT AQUISITIONS

	PRE-1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	TOTALS
ACRES											
NRCS								149	593	178	
WILDLIFE CONSERVATION BOARD		134	134	134	134	134	134	134	134	134	1209
WCB – INLAND WETLANDS CONSERV											
CAL FISH AND GAME											248
DUCKS UNLIMITED							130				
USFWS	28018.82	4527.6	5352.4	692.64	1955	3952.46	8189.67	5335.72	3791.14	875.94	62691.39
CALIFORNIA WATERFOWL ASSN											
TOTAL ACRES	28018.82	4661.6	5486.4	826.64	2089	4086.46	8453.67	5618.72	4518.14	1187.94	64148.39
COST											
NRCS								$51,304	$85,000	$75,000	
WILDLIFE CONSERVATION BOARD											
WCB – INLAND WETLANDS CONSERV		$167,667	$167,667	$167,667	$167,667	$167,667	$167,667	$167,667	$167,667	$167,667	$1,509,000
CAL FISH AND GAME											$372,000
DUCKS UNLIMITED							$310,000				
USFWS	$8,588,181	$1,688,280	$1,736,200	$430,421	$660,822	$2,377,540	$3,957,392	$3,395,803	$2,653,798	$633,370	$26,121,807
CALIFORNIA WATERFOWL ASSN											
TOTAL COST	$8,588,181	$1,855,947	$1,903,867	$598,088	$828,489	$2,545,207	$4,435,059	$3,614,774	$2,906,465	$876,037	$28,002,807
										9 yr AV	$2,157,181

RECREATION: SUMMARY TABLE R-1 (rev. 5/20/00)

SUMMARY OF USERS TO PUBLIC AND PRIVATE WETLANDS IN THE GEA AND REST OF MERCED CO. 1994-1998

	Analysis Year				
	1994//5	1995//6	1996//7	1997//8	1998//9
HUNTING					
In GEA					
Federal NWR	3809	5420	5798	7846	8510
State Refuges		12411	12378	10950	
Private			*28465*	28465	
Subtotal			46641	47261	
In All Merced Co.					
Federal NWR	3809	5420	5798	7846	8510
State Refuges		17376	16660	15070	
Private			28465	28465	
Subtotal			50923	51381	
FISHING					
In GEA					
Federal NWR	4964	32085	52027	54700	65640
State Refuges		12888	14022	10924	
Private					
Subtotal			66049	65624	
In All Merced Co.					
Federal NWR	4964	32085	52027	54700	65640
State Refuges		14784	15129	11501	
Private					
Subtotal			67156	66201	
NON-CONSUMPTIVE					
In GEA					
Federal NWR	29343	146725	184782	181158	184782
State Refuges		11514	15984	9031	
Private					
Subtotal			200766	190189	
In All Merced Co.					
Federal NWR				181158	
State Refuges		15222	22131	13407	
State Parks			404472	377008	499806
Private					
Subtotal			426603	571573	

SUMMARY TABLE (rev. 20/0)

EXPENDITURES FOR HUNTING/FISHING AND WILDLIFE WATCHING IN THE GEA AND ALL OF MERCED CO. – 1996/97
BASED ON FEDERAL SURVEY OF HUNTING/FISHING AND WILDLIFE WATCHING 1996

		HUNTING	FISHING	NON-CONSUMPTIVE	TOTAL
IN GEA		46641	66049	200,766	313,456
IN ALL MERCED CO.		50923	67,156	426,603	544,682
CALIF		7,452,000	35,815,000	77,467,000	120,734,000
GEA % of CA		0.63%	0.18%	0.26%	0.26%
Merced % of CA		0.68%	0.19%	0.55%	0.45%
EXPENDITURES					
CALIFORNIA					
TRIP		$277,060,000	$1,454,325,000	$1,579,434,000	$3,310,819,000
EQUIP		$471,380,000	$1,746,979,000	$1,040,355,000	$3,258,714,000
OTHER		$106,518,000	$123,055,000	$254,561,000	$484,134,000
TOTAL		$854,958,000	$3,324,359,000	$2,874,350,000	$7,053,667,000
Average Expenditure					
TRIP		$37	$41	$20	$27
EQUIP		$63	$49	$13	$27
OTHER		$14	$3	$3	$4
TOTAL		$115	$93	$37	$58
	% in Area				
IN GEA					
TRIP	100%	$1,734,100	$2,682,000	$4,093,300	$8,509,400
EQUIP	15%	$442,500	$483,300	$404,400	$1,330,200
OTHER	100%	$666,700	$226,900	$659,700	$1,553,300
TOTAL		$2,843,300	$3,392,200	$5,157,400	$11,392,900
IN ALL MERCED CO.	% in Co.				
TRIP	100%	$1,893,300	$2,727,000	$8,697,800	$13,318,100
EQUIP	15%	$483,200	$491,400	$859,400	$1,834,000
OTHER	100%	$727,900	$230,700	$1,401,800	$2,360,400
TOTAL		$3,104,400	$3,449,100	$10,959,000	$17,512,500

ASSUMPTIONS AND METHODS:

Tables referred to by number are from the USFWS 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

Non-Consumptive days estimated from Number of Calif Participants times 13 days national average days per participant.

5,959,000 13 77,467,000

California expenses for hunting from Table 55: 100% of trip and "other" assumed spent in Merced Co.; 15% of equipment expenses

California trip expenses for fishing from Table 60; Cal. equipment expenses for wildlife watching from Table 48

Participation in wildlife watching activities away from home from Table 37.

EXECUTIVE SUMMARY

This presents a one-page summary of Strong Associates' analysis of the economic impact of growth to the year 2040 in Merced County.

Demographics: Merced County's population is projected to grow by **422,000** from 1996 to 2040. Most of this (340,000) will occur within and in annexations to the cities.

- At low densities (averaging 4.5 residents per acre), **94,195 new acres** would be urbanized by 2040.
- At compact densities (9.0 residents per acre), **47,097 new acres** would accommodate the same growth.

Agriculture Impact: Currently, the County's farmlands produce total annual sales of $2.1 billion and support 27,300 jobs. With conversion to urban use by 2040:

- The low density scenario would result in an estimated **$229.2 million (11%) loss** in total annual sales and reduction of 3,300 jobs (12%).
- The compact scenario would halve that impact, with a **$114.6 million (5%) loss** in total annual sales and reduction of 1,660 farm-related jobs (6%).

Grasslands Ecological Area Impact: The 179,500-acre GEA generates total annual sales of $160.6 million and 3,286 jobs. With potential urban growth by 2040:

- The low density scenario would reduce total sales by an estimated **$14.3 million** (9%) annually and jobs by 328.
- Under the compact alternative, total annual sales would decrease by **$7.1 million** and jobs by 164.

Cities Fiscal: For the six cities combined, new growth from 1996-2040:

- Under the low density approach would result in a **shortfall of $53.6 million**, or $158 shortfall per capita, annually.
- Under the compact alternative would yield a **surplus of $6.3 million**, or $19 surplus per capita, annually.
- Thus the low density approach costs the cities ***$60 million more per year*** than the same growth at more compact density.

County Fiscal:

- Under the low density approach, new growth produces an estimated **$8.2 million deficit**, or $19 per new resident, annually.
- The compact alternative produces a **$6.2 million deficit**, or $15 per new resident.

I. DEMOGRAPHICS

Results:

Table 1 describes the impacts of projected population growth to the year 2040 on Merced County, including each of the six incorporated cities and the unincorporated area. Overall, the population is expected to triple from the 1996 total of almost 200,000 to over 600,000. The cities of Merced, Los Banos, and Livingston are all expected to grow by more than 400%, while Atwater and the unincorporated area are projected to just over double.

The new population (added between 1996 and 2040) totals 422,000. The major share of that is expected to be in Merced, with 187,500 new residents. The unincorporated area will account for 82,200 new residents. The other cities follow with: Los Banos, 63,600 new residents; Livingston, 38,000; Atwater, 31,000; Gustine, 10,700; and Dos Palos 9,000.

Along with the projected new population, we have estimated new jobs, totaling almost 161,400 county-wide. These jobs are proportional to population for each city, based on the ratios from the 1990 census as noted in Table 1A below.

Currently, the density per gross urbanized acre averages 4.0 residents per acre county-wide. For this cities, the average is 5.5 persons per acre, with the ratio varying from a low of 4.7 and 4.8 persons per acre in Los Banos and Livingston to a high of 6.7 persons per acre in Atwater. Merced, Dos Palos, and Gustine are all close the average of 5.5. For the unincorporated area of the County, we estimate an average of 2.7 persons per gross urbanized acre, which includes rural residential lots of less than 10 acres. (This is calculated in the footnote to Table 1A.)

Most importantly for this analysis, Table 1 projects the amount of land needed to accommodate the new residents. For ease of comparison, we have used two scenarios:

- Low density represents the current average density per gross urbanized acre. At these densities, the new population by year 2040 will require a total of 94,195 new acres of urbanized land.
- Compact density, in contrast, assumes the potential to accommodate 10% of new residents in urban infill areas and the remaining 90% at densities not quite double the current average. At these more compact densities, the new population would only require 47,097 acres of new urbanization.

Supporting Methodology:

The supporting information for Table 1 is presented in Tables 1A and 1B. Table 1A shows how the demographic baseline data was calculated. The first section is directly from the 1990 Census, showing population, jobs, housing units, and the ratios of population to housing and jobs. The second section of Table 1A begins with the

updated 1996 population figures from the State Department of Finance. From these, the census data ratios are applied to estimate the 1996 jobs and housing units. These 1996 figures are the baseline for projecting the land use and fiscal impacts in the rest of this report.

Finally, the third section of Table 1A estimates the currently urbanized acres of each city and the unincorporated area. The data for the cities is from the Merced County GIS file LU 90.dbf updated by current city zoned land use information. These data are more accurate than the 1990 GIS data, since a great deal of land in the current city boundaries has been developed since 1990.

For the unincorporated area, the GIS LU 90.dbf identified 8,182 acres as residentially developed with 19,865 units. These represent urban or suburban pockets in the unincorporated area, mostly adjoining or near the cities. For purposes of this analysis, Strong Associates has also identified smaller developed rural lots (1.5 to 10 acre parcels) as a residential land use. Based on Strong Associates' "Analysis of Rural Parcels in the Central Valley," May 1999 (prepared for American Farmland Trust), we estimate an additional 9,667 acres in this use, accommodating 2,188 dwelling units. It is appropriate to count these smaller rural lots as part of the County's current low density housing mix; very few of them are in commercial farming.

These estimates of urbanized land use provide the gross density per acre ratios which are then used in Table 1 for projecting the impact of the low density (current average density) growth scenario.

Table 1B shows two alternative methodologies for projecting population growth in the County. Both begin with the projection to year 2020 from the Merced County Association of Governments' "1998 Regional Transportation Plan". The first method takes the average growth rate from 1995-2025 and continues it to 2040 (an average growth of 16% per five-year period). This method represents a high-end potential growth. If this growth rate were to continue, the overall County population in 2040 would be quadruple the 1995 level.

The second method - the one used in this report - uses the State Department of Finance projections of population in the year 2040. The overall growth rate between 2025 (using the COG 1998 Regional Plan estimate for that year) and 2040 would be 9% per five-year period, yielding a 2040 population of 620,000, a little over triple the 1995 population.

II. AGRICULTURAL IMPACT

Results:

As a result of the projected urban growth, productive farmland will be reduced by an equal number of acres. (It is assumed that the agricultural land around cities - level, well-irrigated, accessible land - cannot be replaced with comparable agricultural use elsewhere in the county, so each acre of urbanization is essentially lost from farm use.) Table 2 shows the amount of farmland that would be urbanized:

- For the low density scenario (at current average densities), 63,632 acres would be annexed into the cities, and 30,563 acres of the unincorporated area would be urbanized, for a total of 94,195 acres.
- For the compact density scenario, the amount of farmland lost to urbanization would be one-half of that: 31,816 acres annexed to cities and 15,281 acres in the unincorporated area, for a total of 47,097 acres.

The value of the agricultural economy on these lands is also shown in Table 2.

- At low densities, 94,195 acres converted to urbanization would reduce direct annual farmgate sales by $156.4 million and total (direct and indirect) farm-related sales by *$229.2 million*. (The indirect multiplier is explained in Table 2A.)
- At compact densities, on the other hand, the direct annual sales of the 47,097 acres lost to farming would drop to $78.2 million, and the total direct and indirect sales lost are estimated at *$114.6 million* annually.

The number of farm-related jobs affected by projected urban growth is estimated as follows:

- For low density growth, 1,846 direct farm jobs would be lost, and a total of 3,314 direct and indirect jobs would be lost.
- For compact growth, 923 direct farm jobs and a total of 1,657 direct and indirect jobs would be lost.

Supporting Methodology:

Table 2A provides detail on the existing agricultural sales and jobs county-wide. As reported in the County Agricultural Commissioner's report, of the county's 1,162,000 acres of farmland, nearly one-half (568,000 acres) are in range fed cattle production. Other major crop types include: hay pasture 162,900 acres; feed grains 129,900 acres; nuts 83,800; cotton 68,800 acres; vegetables 44,700; food grains 36,500; and fruits 32,000 acres. Minor amounts of acreage are also in dairy; poultry, sheep, pigs and other animal products; sugar, greenhouse, and other miscellaneous crops.

The values of these types of agricultural production, however, vary widely. For example, the huge acreage of range land produces an average value of only $96 per acre, while the value of the county's 5,684 acres of dairies averages $92,700 per acre, and poultry (2,680 acres) is a close second at an average of $87,600 per acre.

In all, county-wide agriculture currently yields direct annual sales of almost $1,450 million, an average of $1,248 per agricultural acre.

When indirect economic activity is added (using the multipliers specific to each crop types as shown in the footnote), total agriculture-related sales are estimated at $2,114 million annually. The sales multipliers are from the Cooperative Extension Input-Output study of Merced County generated by George Goldman specifically for this analysis, based on calculations of indirect economic activity generated by each crop type.

The number of direct farm jobs is estimated at almost 14,000; when indirect jobs are added to this, the current farm-related jobs in the county total 27,300. These direct and indirect job estimates are also from the Cooperative Extension Input-Output study, specific to each crop type.

It must be noted that the distribution of crop types and value is not equal throughout the county. Indeed, the areas close the cities - the flat, higher quality soils areas of the county - produce the higher value crops. The footnote to Table 2B estimates the percentage of land around each city in the various crop types, based on interviews with Agricultural Commissioner and Cooperative Extension staff and review of the GIS LU 90 data. Crop types vary substantially from city to city. For example, northeast Los Banos has an estimated 80% of its farmland in low-value hay pasture, jointly in seasonal wetlands use. Atwater and Livingston, on the other hand, both have 55% of their adjoining farmlands in high-value nut production.

Based on these percentages, Table 2B estimates the acreage and value of the agricultural land around the six cities where the projected urban growth will occur. The first section shows acreage converted to urbanization by 2040. Note that all detailed figures are for the low density approach, with the total for the compact scenario (at one-half of the low density) shown on the last line.

The second section shows direct sales lost, using the average direct sales per acre for each crop type projected to be converted to urban use. As shown:

- In the low density approach, annual direct sales would drop by $156.4 million.
- In the compact scenario, $78.2 million in annual direct sales would be lost.

The third section calculates the *total* direct and indirect sales lost, using the Input-Output multipliers for each crop type (shown and discussed in Table 2A).

- The low density approach reduces total annual sales by $229.2 million.
- The compact alternative halves that impact, with total annual sales reduced by $114.6 million.

The fourth and fifth sections of Table 2B (on the second page) show the projections of direct and indirect jobs lost due to urbanization, again using the Input-Output multipliers relevant to the crop types affected. Total farm-related jobs lost are estimated at 3,314 for low density versus 1,657 for the compact alternative.

III. CITY FISCAL IMPACT

Results:

Population and employment growth in the county's cities will increase both revenues and costs to the city governments, under any development scenario. Table 3 estimates the total new revenues and new costs anticipated due to population growth between 1996 and 2040 for each city.

- Under the low density scenario, new revenues are less than the new costs involved for all of the cities. For the cities combined, the estimated net annual shortfall is $53.6 million. On a per capita basis, the average new city resident would produce a $158 net annual shortfall.
- The compact density scenario, on the other hand, generates small net revenue surpluses for almost all of the cities (the exception being Livingston), with the combined total net annual surplus of $6.3 million. The average new city resident would generate a $19 net annual surplus.

Some of the revenues and costs are the same or minimally affected by density, while others vary considerably:

- Revenues and costs estimated on an average per resident or per employee basis increase in direct proportion to the growth in population, regardless of density.
- Property tax revenues vary somewhat due to differences in tax share distribution. The compact scenario yields almost $1.0 million more in annual revenues due to the cities receiving a higher share of property tax in infill areas than in new annexations.
- The biggest differences between the scenarios are the costs that are based on the acreage affected and capital improvements required. The low density option requires an estimated $73.3 million in acre-related costs and $55.9 million in annualized capital costs, compared to $36.6 million and $33.5 million respectively for the compact scenario.

These estimates are discussed in more detail in the supporting section below.

Supporting Methodology:

Table 3A presents detailed data on the cities' revenues from the California State Controller's Cities Annual Report for Fiscal Year 1996-97. The last column is our allocation of each line item to its primary revenue source, i.e. residents, jobs, both residents and jobs, property taxes, or enterprise accounts. On page 3 of the table, these allocations are subtotaled; then revenues that derive from both residents and jobs are allocated at the ratio of residents to job population equivalents. (Each job is considered to equal 2/3 the impact of one resident. The ratio of population-to-job equivalents is calculated for each city in Table 1B above. The average for all cities is about 80% residential to 20% jobs.)

Finally on page 3 of Table 3A, the average revenues generated per resident and per job are calculated based on the 1996 population and estimated jobs. These factors are applied to the new population and jobs to project average revenues (excluding property

tax) in Table 3. These are the same under both scenarios, with new city residents generating $159.4 million and jobs generating $57.1 million in revenues.

Table 3B follows the same methodology and source document for city costs as Table 3A did for revenues. Page 2 shows the totals by allocation and calculates the average costs per resident and per job, again based on the 1996 baseline. When these factors are applied to growth in Table 3, we project average costs of $127.6 million for residents and $25.8 million for jobs - the same for both scenarios.

An allocation factor is added for acre-related costs, which include fire protection, streets and street lighting, and an estimated half the ongoing costs of solid waste, sewer, and water services. (The other half of those items is split to residents and jobs. This is based on the assumption that some service costs relate to people served while some is due to expansiveness of the system.) As itemized in Table 3B, these costs currently total $26.7 million annually for the cities combined, coming to an average of $1,169 per city acre. (Note that these costs vary from city to city, with a low of $749 per acre in Livingston to a high of $1,768 per acre in Gustine). These per acre factors are used to project the costs shown in Table 3.

- The low density scenario, adding 63,632 acres to the cities, would generate new acre-related costs of $73.3 million annually.
- In contrast, the compact density option, with only 31,816 new acres, would cost $36.6 million for annual acre-related services.

Table 3C evaluates property taxes as a case study item. The average household value for each city is estimated based on regional real estate values, cross-checked with city property tax revenues. We also estimate that job-related property value will average 25% of per resident value. Note that this analysis assumes that the average property values of new development will be the same under either density. Price of housing is primarily a function of new residents' ability to pay and size of unit, rather than lot size. If all housing within the region is at higher density, relative values should remain constant.

All property is taxed at 1% of assessed value, but the city share of this revenue varies. According to information from LAFCo, the city share of property tax ranges from 14.5% to 18.5% for infill (that is within existing city boundaries); for new annexations, however, the city tax share ranges from 9.0 to 9.7%. (With new annexations, the County retains its full share, while the cities receive only the Fire District share of the property tax.)

Based on these values and tax rates, property taxes differ slightly under the two scenarios. The low density approach generates an estimated $12.4 million in annual property tax, while the compact plan would produce over $13.3 million. This is due to the infill development yielding a higher share of taxes to the cities than newly annexed areas.

Capital costs of new services are calculated on an annualized basis in Table 3D, based on a Strong Associates case study. The two types of capital costs, as detailed in the footnote of Table 3D, are:

- Internal area costs, including sewer mains (at $1,400/acre), roads/storm drains (at $5,000/acre), and fair share of fire station costs ($500/acre assuming a $2.5 million station serves 5,000 acres). These total $6,900 per acre, or an annualized cost of $703 per acre (financed for 20 years at 8% interest).
- Spine infrastructure costs, consisting of sewer mains and spine roads into new urban areas, estimated at $2,244,000 per mile, or $1,726 per acre (one mile per 1,300 acres), for an annualized cost of $176 per acre.
- The combined $879 annualized cost per acre is used to project capital costs of low density development.
- For compact density, we have added 20% to the average cost to allow for larger pipes and greater usage levels, coming to $1,054 per acre.

Note that we have used the same average costs for new capital improvements for all of the cities. For the cities combined, these capital costs to serve new development to the year 2040 are estimated as follows:

- The low density scenario would cost $55.9 million annually for capital improvements.
- The compact density alternative would cost $33.5 million.

IV. COUNTY FISCAL IMPACT

Results:

The County's revenues and costs are affected by growth both within the cities and in the unincorporated area. Most of the County's revenues and costs will be nearly the same under the two alternative scenarios. As shown in Table 4, on the revenue side:

- Average revenues from new residents are estimated at $359.1 million annually, and from jobs, $32.5 million - the same under both scenarios.
- Property taxes are almost the same under both scenarios - $30.3 million annually from the low density option vs. $29.9 million from the compact approach - with the difference due to a lower county share from infill development.
- The County will lose net revenue from conversion of farmlands and wetlands. For the low density option, these lost revenues are estimated at $786,000 and $6,800, whereas for the compact scenario, the losses would be $393,000 and $3,400 annually.

On the cost side:

- Average costs to serve residents, at $404.0 million, and for job-related services, at $21.2 million, are the same for both scenarios.
- Road cost is the significant difference between the two scenarios in impact on County government (see discussion below). With estimated added road costs of $133 per new unincorporated urbanized acre, the low density approach would

increase costs by almost $4.1 million annually, whereas the compact density alternative would cost $2.0 million.

Comparing total new annual revenues and costs under the two alternatives:

- The low density approach has estimated revenues of $421.1 million, exceeded by costs of $429.3 million, yielding a net annual deficit of $8.2 million (or $19 per capita).
- Under the compact density option, revenues are almost identical, at $421.0 million, while costs are estimated at $427.3 million, reducing the net annual deficit to $6.2 million (or $15 per capita).

Supporting Methodology:

Table 4A details the existing County revenues and Table 4B details the costs, with data for both drawn from the California State Controller's Counties Annual Report for Fiscal Year 1996-97. In both tables, we have allocated revenues and costs to:

- Residents and jobs (depending on the nature of the item and using the resident-to-job equivalent ratio where the item relates to both);
- Unincorporated area only; and
- Case studies, which include property tax, agriculture and wetland-related items.

In Table 4C, the total of average revenues and costs (excluding case study items) are calculated on a per resident and per job basis, using the 1996 baseline data (from Table 1A). These factors are then used to project average revenues and costs from the new population. These added revenues and costs are the same for both scenarios.

Table 4D shows the estimated County property tax revenues. The County's shares of property tax per resident and job are from Table 3C above. We have assumed the average value for future unincorporated area development will be the same as the all-cities average value. Based on these values:

- The low density approach yields projected new property tax revenues of $30.3 million annually.
- The compact scenario yields slightly less, at $29.9 million annually.

Tables 4E and 4F present the case studies of agricultural and wetlands area impact on the County fiscal picture. The compact scenario benefits the County in maintaining more land in farming and wetlands, since both of these land uses produce more revenue than they cost in services.

- Under the low density approach, the County would lose annual net revenues of $786,000 from converted farmland and $6,800 from converted wetlands.
- Under the compact plan, the estimated lost annual net revenues would be $393,000 and $3,400 respectively.

While significant, these impacts are small compared to the large fiscal impacts of urbanization.

In Table 4E, note that we have subtracted wetland acres from total farmlands converted to urbanization, so that the fiscal analysis does not double-count those lost revenues. (For private sector analysis, however, mixed use acres affect both farm and wetlands economic activity.) Also note that the farmlands slated for urbanization are generally more valuable per acre than the county-wide average. Thus while the low density scenario would convert 7.4% of existing farm acres, it results in a loss of 9.1% of farm assessed value. Similarly the compact option would convert 3.7% of acres but 4.6% of value. These same percentages of value lost are applied to all other revenues and costs for farmlands, on the conservative assumption that higher value crops require somewhat more County services.

In Table 4F, potential wetland acres lost to urbanization are based on the Los Banos northeastward growth plus a proportionate share of unincorporated area growth. The wetlands are estimated at an average assessed value of $600 per acre. Other wetlands-related revenues and costs are estimated from the budget and interviews.

V. GRASSLANDS ECOLOGICAL AREA IMPACTS

Results:

The Grasslands Ecological Area (GEA) encompasses the Grasslands Water District and surrounding area. As summarized in Table 5, the area totals 179,500 acres, of which 90,100 acres are wetlands, 38,600 are combined range and wetlands, 49,800 are currently agricultural, and less than 800 are in urban development. (Details are discussed in reference to Table 5A below.)

Los Banos northeastward development is the major potential for conversion of wetlands and farms to urbanization. (The other cities close to the Grasslands Ecological Area are directing their growth away from the GEA and thus will have virtually no impact.) Assuming one-half of the population growth of Los Banos occurs in this direction, Table 5 projects that by 2040:

- Under the low density approach, almost 9,800 acres would urbanize, with most of that (6,600 acres) in Los Banos annexation and the balance in the surrounding unincorporated area. (The unincorporated area impact is based on the county-wide ratio of city-to-unincorporated area development.)
- Under the compact density alternative, 4,900 acres would be converted, 3,300 of that annexed to Los Banos and the balance in the unincorporated area.

Note that most of the acreage affected is combined range/wetlands, converting an estimated 20% of the GEA total in this land use under the low density scenario. These lands are dual use, and their conversion will thus result in a loss of farm sales as well as wetlands economic activity, as discussed below.

The conversion of agricultural and range lands will result in loss of farm-related economic activity. Currently, the GEA generates an estimated $119.7 million in direct and indirect annual farm sales and supports 2,487 total farm-related jobs. By 2040:

- With low density development, there would be a loss of $11.8 million (10%) in total direct and indirect agricultural sales and a loss of 243 farm-related jobs.
- Compact development would reduce those losses to $5.9 million in total annual agricultural sales and 122 jobs.

The potential urbanization of wetlands would also reduce the economic benefits of recreation and government and private investment in these areas. Current direct and indirect benefits from the wetlands are estimated at $40.9 million in annual sales and 798 jobs. With urban conversion by 2040:

- Under low density development, wetland-related sales would drop by $2.5 million (10%) annually and jobs by 85.
- Under compact density, sales would be reduced by an estimated $1.2 million (5%) annually and jobs by 42.

Combined, the conversion of farmlands and wetlands within the GEA would result in direct and indirect annual sales losses of $14.3 million under low density development compared to $7.1 million with compact development.

Supporting Methodology:

A detailed description of existing Grasslands Ecological Area (GEA) land uses is shown in Table 5A, along with a comparison to the County at large and the two-mile buffer area around the GEA. All of this data is from the GIS LU90 maps. Note that the 179,500-acre GEA comprises over 14% of the total County. Within the GEA:

- 90,000 acres (50% of the total) is exclusively wetlands, with approximately 20,000 acres of that in State and federal ownership;
- Dual-use range and wetlands comprise another 38,600 acres, or 22% of the total (based on interviews with GWD staff);
- Other agricultural use is predominantly grain, seed, truck and row crops, accounting for 50,000 acres, or 27% of the total acreage; and
- There is a very low ratio of urbanized area (0.4%).

The two-mile buffer area encompasses another 160,400 acres, or almost 13% of the County area. Of this, 127,100 acres are unincorporated area with little urbanization (0.5%). The portion of buffer area within city boundaries is 33,200 acres, with almost 5% of that urbanized. In all of the buffer area, most of the farmland is in grain, seed, truck and row crops. It should be noted that the analysis of GEA impacts above does not include the buffer area. These impacts, however, are included in the County-wide analysis.

Table 5B provides details on the existing GEA agricultural uses and economic activity. As shown, the 88,400 acres of farm and rangeland produce annual direct sales of $86.3 million, or an average of $976 per acre. There is a wide range of sales value depending